CLAIMS

1. A method for making a block or gradient final (co)polymer comprising a first step of radically polymerizing a mixture of ethylenically unsaturated monomers to an iodine atom-containing intermediate polymer, wherein the iodine atom-containing intermediate polymer comprises at least 50 mole% of methacrylate monomers, in the presence of a radical precursor and an $I_2$ or an iodine chain transfer agent, followed by a second step of radically polymerizing a mixture of ethylenically unsaturated monomers in the presence of a radical precursor and the iodine atom-containing intermediate polymer of the first step.

2. The method according to claim 1 wherein the mole ratio of the iodine atom-containing intermediate polymers to the radical precursor of the second step is greater than 0.1n, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

3. The method according to claim 1 wherein the polymerization occurs at a temperature lower than about 130°C

4. The method according to claim 3 wherein the temperature is lower than 110°C.

5. The method according to claim 3 wherein the temperature is lower than 90°C.

6. The method according to claim 3 wherein the temperature is lower than 70°C.

7. The method according to claim 1 wherein the polymerization in the first and second steps are performed in the presence of an epoxide-

containing compound.

8. The method according to claim 7 wherein the mole ratio of the epoxide to the iodine atom-containing intermediate polymer is greater than 0.01.

9. The method according to claim 8 wherein the mole ratio of the epoxide to the iodine atom-containing intermediate polymer is greater than 0.05.

10. A method for making a block or gradient final (co)polymer comprising a step of radically polymerizing a mixture of ethylenically unsaturated monomers in the presence of a radical precursor and an iodine atom-containing intermediate polymer or a mixture of iodine atom-containing intermediate polymers, wherein the iodine atom-containing intermediate polymer comprises at least 50 mole% of methacrylate monomers and is obtainable from a polymerization of ethylenically unsaturated monomers.

11. The method according to claim 10 wherein the mole ratio of the iodine atom-containing intermediate polymer to the radical precursor is greater than 0.1n, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

12. The method according to claim 10 wherein the temperature during the polymerization step is lower than about 130°C.

13. The method according to claim 12 wherein the temperature is lower than 110°C.

14. The method according to claim 12 wherein the temperature is lower than 90°C.

15. The method according to claim 12 wherein the temperature is lower than 70°C.

16. The method according to claim 10 wherein the polymerization step is performed in the presence of an epoxide-containing compound.

17. The method according to claim 16 wherein the mole ratio of the epoxide to the iodine atom-containing intermediate polymer is greater than 0.01.

18. The method according to claim 16 wherein the mole ratio of the epoxide to the iodine atom-containing intermediate polymer is greater than 0.05.

19. A method according to claim 10 wherein the iodine atom-containing intermediate polymer is obtainable by polymerization of a mixture of ethylenically unsaturated monomers comprising at least 50 mole% of methacrylate monomers in the presence of a radical precursor and an iodine or an iodine chain transfer agent.

20. The method according to claim 1 wherein the mole ratio of the $I_2$ to the radical precursor of the first step is between 0.05n and 0.5n, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

21. The method according to claim 1 wherein the iodine chain transfer agent is sulfonyl iodide.

22. The method according to claim 21 wherein the mole ratio of the sulfonyl iodide to the radical precursor of the first step is greater than 0.1n, wherein n stands for the number of radicals effectively generated per molecule of radical precursor.

23. A method according to claim 1 wherein the iodine atom-containing intermediate polymer has a molecular weight of less than 10,000.

24. A method according to claim 1 further comprising a third step of removing the iodine atom in the final polymer.

25. The method according to claim 24 wherein the iodine atom is removed by nucleophilic reaction, by heating, or by reaction with a radical-generating compound, optionally under reducing conditions.

26. A block or gradient (co)polymer obtainable by the method of claim 1.

27. A film forming composition comprising the block or gradient (co)polymer of claim 26.

28. A coating composition, adhesive or ink formulation comprising the block or gradient (co)polymer of claim 26.

29. An automotive or industrial coating composition comprising the the block or gradient (co)polymer of claim 26.

30. A rheology additive, surfactant, dispersant, adhesion promoter or flow improvement additive comprising the block or gradient final (co)polymer of claim 26.

31. A block or gradient (co)polymer obtainable by the method of claim 10

32. A film forming composition comprising the block or gradient (co)polymer of claim 31.

33. A coating composition, adhesive or ink formulation comprising the block or gradient (co)polymer of claim 31.

34. An automotive or industrial coating composition comprising the the block or gradient (co)polymer of claim 31.

35. A rheology additive, surfactant, dispersant, adhesion promoter or flow improvement additive comprising the block or gradient final (co)polymer of claim 31.